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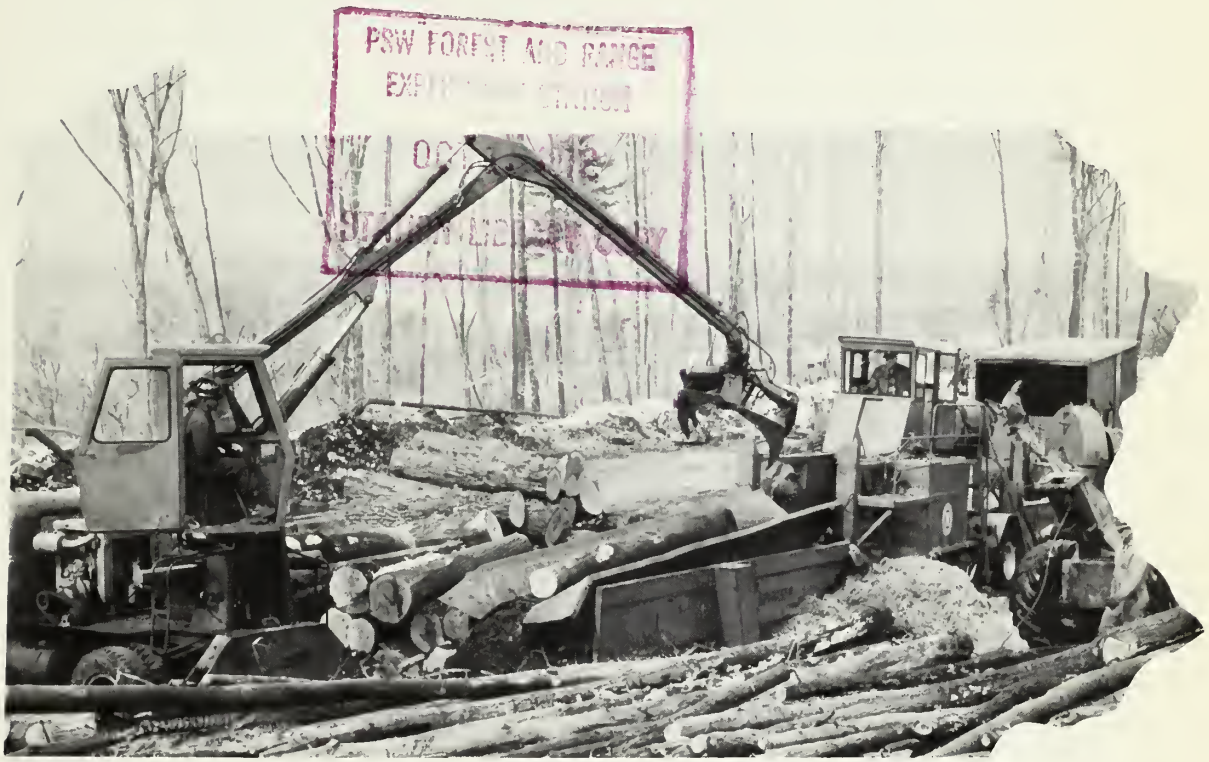
Primary Wood-Product Industries of PENNSYLVANIA--1969


PSW FOREST AND RANGE
EXPERIMENT STATION

by James T. Bones
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HIGHLIGHTS

THE 1969 survey of the wood-product industry showed that, since the 1964 survey in Pennsylvania:

- Total roundwood output was down 1 percent to 148.9 million cubic feet.
- Sawlog production was down less than 0.5 percent to 543 million board feet, while number of operating sawmills dropped from 999 to 684.
- Pulpwood production was up 8 percent to 622 thousand cords.
- Veneer log production was down 27 percent to 15 million board feet.
- Cooperage log production was up 52 percent to nearly 10 million board feet.
- Mine timber production was down 6 percent to nearly 6 million cubic feet.
- Combined production for other products such as posts, bat and handle stock, and miscellaneous dimension stock was down 63 percent to 2.5 million cubic feet.

BACKGROUND

THE FOREST SERVICE of the U.S. Department of Agriculture conducts continuing forest surveys of all states to provide up-to-date information about the timber resources of the Nation.

The first forest survey of Pennsylvania was completed in 1955. Ten years later the State was resurveyed, employing new aerial photographs, remeasuring permanently located field plots, and establishing new plots. The second timber-resource report *(Ferguson 1968)* showed the forest-area and inventory-volume statistics for 1965 and highlighted the changes that occurred between surveys. A third statewide timber survey is planned for some time after 1975.

Because the timber-resource reports that result from these surveys are many years apart, information about the State's timber supply, its forest industries, and the timber-product output is needed for intervening years. Forest-industry surveys such as this one are made possible by assistance from the states for interim years between forest surveys. Such industry surveys are essential for forestry planning purposes when important changes have taken place in the makeup of forest industries within the state.

Important changes have occurred in the makeup of industry in Pennsylvania since 1964. A 32-percent drop in the number of operating sawmills and a shift in the kind and species of pulpwood preferred by Pennsylvania pulpmills are only two indications of these changes. These and other changes in forest-industry production patterns were identified during the 1969 Pennsylvania forest-industry survey.

This report resulted from a 100-percent canvass of primary wood manufacturers in Pennsylvania by the Northeastern Forest Experiment Station's Forest Survey project and the Pennsylvania Department of Environmental Resources. Pulpwood-production data were gathered during the Station's annual survey of woodpulp producers of the Northeast. No attempt was made to trace wood not channeled through primary manufacturers. Therefore products such as veneer logs that were purchased by brokers for export would not be included in the veneer-log production totals.

The Pennsylvania Department of Environmental Resources assembled a list of all known wood-manufacturing firms for this canvass, and later the Forest District personnel contacted all nonrespondents. The Experiment Station mailed questionnaires to each firm (including possible out-of-state consumers of Pennsylvania wood) and compiled data from the completed questionnaires.

SOME DEFINITIONS

Commercial forest land. Forest land that is producing or capable of producing crops of industrial wood and is not withdrawn from timber utilization. Industrial wood includes all roundwood products except fuelwood.

Growing-stock volume. The net volume, in cubic feet, of live growing-stock trees that are 5.0 inches d.b.h. and over, from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. Net volume equals gross volume less deduction for rot.

Sawtimber tree. A tree of commercial species that: (a) is of the following minimum diameters at breast height—softwoods 9.0 inches and hardwoods 11.0 inches; and (b) contains at least a 12-foot merchantable sawlog.

Merchantable sawlog. A log contained in that portion of the live tree that meets the minimum log-grade specifications as defined in the standard-lumber log grades (Ferguson 1968, p. 38). Minimum sawlog diameters are—6.0 inches for softwoods and 8.0 inches for hardwoods, and minimum sawlog length is 8 feet for both species groups.

THE TIMBER-BASED INDUSTRY

Timber industries are important to Pennsylvania. Standard industrial classes such as textile, metals and metal fabrication, and petroleum and coal products are so dominant in Pennsylvania that they tend to overshadow the importance of the State's timber industries. The 1967 U.S. Census of Manufacturers showed that the timber industries (24 — Lumber and Wood products and 26 — Paper and Allied Products) accounted for the following percentages of the State's total manufacturing activities:

Item	*Percent*
Manufacturing employment	3.7
Manufacturing payrolls	3.4
Value added by manufacture	3.7
Cost of materials	4.1
Value of shipments	4.0
Capital expenditures	6.9

Timber industries provided more than 57,000 jobs in 1967 and paid their employees more than $350 million in wages. The value of products produced by these industries was more than $1.5 billion.

THE TIMBER RESOURCES

Growth Exceeds Cut

The 1965 Pennsylvania timber-resource report showed that the State has an abundance of wood fiber in trees 5 inches d.b.h. (diameter breast high) and larger. The annual cutting rate, based on the 1954-64 decade, equaled only one-third of the volume added annually by growth to growing-stock trees (less mortality). Approximately 390 million cubic feet of hardwood growing-stock volume on commercial forest land and 21 million cubic feet of softwood was accumulating annually in Pennsylvania's forest bank account.

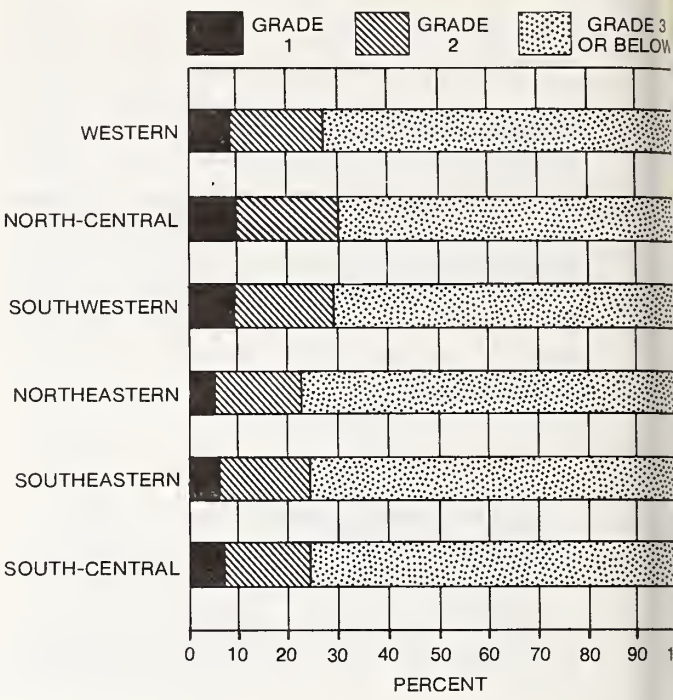
Estimates for 1965-70 indicate a slight drop in the annual cutting rate of growing stock, and a corresponding increase in the growing-stock volume inventory. About 495 million

Figure 1.—The geographic regions used in the forest survey of Pennsylvania.

cubic feet of hardwood and 25 million cubic feet of softwood growing-stock volume is now accumulating annually in Pennsylvania's forest bank account.

Statewide, hardwoods make up more than 90 percent of the growing-stock volume and exceed 92 percent in five of the six geographic regions of the State (fig. 1). In the Northeastern Region hardwoods make up 85 percent. Oaks are by far the leading species statewide and account for 40 percent of the total volume. Net growth of growing stock exceeded cut in all but the South-Central Region (table 1). In this region the softwood growing stock harvested during the 1954-64 base period exceeded growth for the period. In terms of sawtimber volume, the softwood harvest exceeded growth in both the South-Central and Western Regions. Overall, however, these cutting deficits were more than outweighed by surpluses of softwood sawtimber and growing-stock growth in the other regions.

Figure 2.—The hardwood sawtimber volume in Pennsylvania in 1965, by standard-lumber log-quality grades and regions.



Tree Size Limits Present Use

The North-Central Region contains more sawtimber and growing-stock volume than any of the other regions. During the 10-year base period, 205 million cubic feet of growing-stock volume and 723 million board feet of sawtimber volume were being added annually to the Region's timber stands. Fifty-eight percent of the board-foot volume and 84 percent of the cubic-foot volume, however, were in trees less than 15 inches in diameter at breast height.

Although these small trees show promise of providing ample raw material for the Region's sawmills and veneer plants in the future, at present the sawlogs that would result from cutting these immature trees would be mostly of poor quality. Shown graphically (fig. 2), the distribution of hardwood volume by standard-lumber log grades confirms that this was the case, not only in the North-Central Region, but in the rest of the State as well. A major portion of the grade 3 or lower grade logs in all regions are in small diameter sawtimber trees.

Total Wood Supply Not Available

The statistics presented above were gathered by measuring the physical attributes of the total timber resource exclusive of the complex — and often interacting — economic and social factors that determine the volumes of specific kinds of timber available to the potential timber buyer at any point in time or region within the State. Whether the timber is easily accessible, of sufficient size, contains sufficient volume per acre to offset the cost of harvesting, or is even available for purchase in specific localities, are questions that can be answered only through special studies.

Private owners, exclusive of forest industry, owned 72 percent of the sawtimber volume in Pennsylvania in 1965. An increasing percentage of the privately held woodlands is being purchased or leased by absentee owners, or groups of owners, who are holding the land for

recreation or nontimber uses. State management foresters and timber-industry representatives face an almost insurmountable task in simply contacting these absentee owners—much less in interesting them to manage and harvest their timber. These owners have no woodland owners association to represent their interests in Pennsylvania. In some cases the operable timber volume growing on a single ownership is not large enough to induce an industrial procurement agent or logging operator to harvest or use it. Some private owners refuse to allow timber harvesting on their holdings at any price.

Some large public and industrial timberland owners, whose lands now contain extensive acreages of young trees, have developed deferred cutting plans. These plans call for harvesting only a portion of the annual growth in order to build up per-acre growing-stock volumes as the stands mature. In time this cutting regimen will allow higher cutting rates as the timber quality for sawlogs and other products increases, but at present only a portion of the net growth on these ownerships is available for harvesting.

When these economic and social factors are considered along with the raw-material specifications required for various wood-manufacturing processes, one can easily understand why the net annual growth from Pennsylvania forests is not being harvested.

THE INDUSTRIAL ROUNDWOOD HARVEST

Industrial roundwood includes sawlogs, veneer logs, pulpwood, cooperage logs, mine timbers, posts, and all other roundwood products cut from trees—except fuelwood. Nearly 150 million cubic feet of industrial roundwood was harvested from Pennsylvania timberlands in 1969 (table 3). This represented more than 32 percent of the entire 1969 harvest for the six Middle Atlantic States (Delaware, Maryland, New Jersey, New York, Pennsylvania, and West Virginia). The 135 million cubic-foot hardwood harvest was larger than that of any of the other 13 states in the Northeast.

Sawlogs and Pulpwood Are Most Important Products

Sawlogs were the major product, accounting for 58 percent of the hardwood cut and 63 percent of the softwood cut. Pulpwood was second in importance, representing a third of the total roundwood cut. Other products cut included veneer and cooperage logs, mine timbers, posts, bat and handle stock, and miscellaneous dimension stock.

In the past 15 years the sawlog component of the harvest has remained constant (fig. 3).

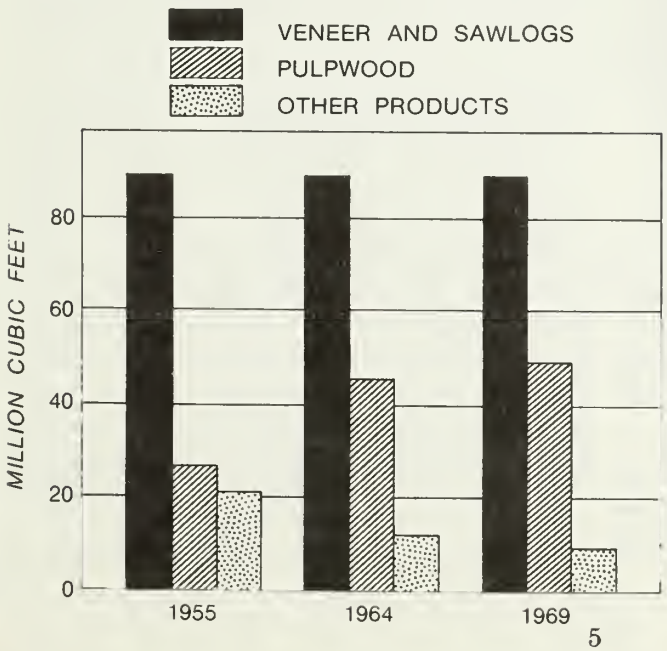


Figure 3.—Industrial roundwood production in Pennsylvania for selected years.

The pulpwood harvest has consistently increased while the other products group has tended to decrease. Between 1964 and 1969, the sawlog harvest has changed less than 1 percent, while the pulpwood, cooperage-log, and post output rose 8 percent, 52 percent, and 18 percent respectively (table 4). Veneer-log output dropped 27 percent, from 2.9 million cubic feet in 1964 to 2.1 million cubic feet in 1969. Decreasing deep-mine coal production caused a 6-percent drop in the volume of wood used for mine timbers.

Overall, the hardwood harvest declined 2 percent in the 5-year period, while the softwood harvest rose 2 percent. More hardwoods were being cut for pulpwood, while greater quantities of softwoods were being cut for sawlogs.

Harvest Greatest in Central Regions

The central portion of the State, which encompasses the North-Central, South-Central, and Southwestern Regions, accounted for nearly 70 percent of the total roundwood harvest in 1969 (table 5). The North-Central Region's harvest alone represented nearly 40 percent of the State's industrial roundwood harvest. The 54.4 million cubic-foot hardwood cut and the 4.5 million cubic-foot softwood cut there were the largest of all regions. More sawlogs and more pulpwood were cut in the North-Central Region than in any other region of the State. The Western Region had the greatest harvest of other products and accounted for 47 percent of the 1969 total.

LUMBER AND SAWLOGS

Lumbering has been important to the State's economy in the past. The U.S. Bureau of Census attests to the importance of lumbering through its periodic statistical reports during these early days. Important benchmarks include:

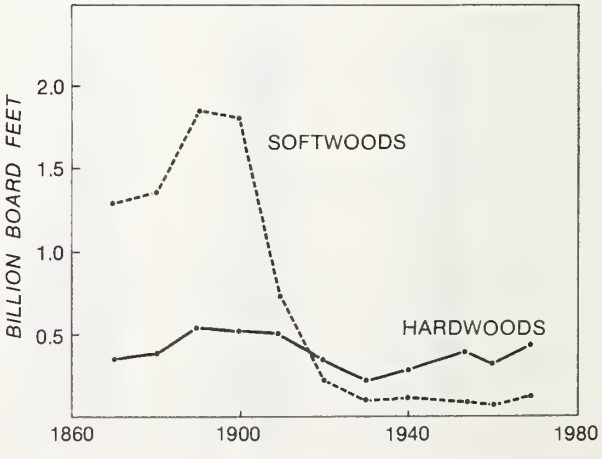
- Lumber production in 1859 was valued at $10.7 million, more than 11 percent of the national total. Average value per thousand board feet was $11.63.
- By 1860 Pennsylvania reported the Nation's highest lumber production.
- Lumber production peaked in Pennsylvania about 1890. More than 2.3 billion board feet was produced during census years 1889 and 1899.

Hardwood Lumber Production Second Highest in Nation

Softwood lumber production peaked around 1889, when 1.9 billion board feet was manufactured (fig. 4). During the 30 years that followed, softwood production slumped, causing the State to become a net importer of lumber by the turn of the century. Between 1910 and 1920 production of hardwood lumber exceeded that of softwood lumber for the first time.

A low point in lumber production was reached in 1932, when only 200 million board feet was sawed. As the Nation's economy began to build up again after the Depression and the State's young-growth timber stands became merchantable, Pennsylvania lumber production increased once more. By 1954 lumber production had reached 495 million board feet, 83 percent of which was from hardwoods. Preliminary 1969 U.S. Census Bureau lumber production statistics for the State showed that 545 million board feet of lumber was produced, 457 million of which was hardwood. By these estimates, Pennsylvania ranks six-

Figure 4.—Lumber production in Pennsylvania for selected years, 1860 to 1969.



teenth in the Nation for total lumber output, and second in the Nation for hardwood lumber output.

Number of Sawmills Decreases as Unit Production Increases

There were 1,501 sawmills operating in Pennsylvania in 1899, many of them low-volume portable softwood mills. As production dwindled over the years, the number of sawmills dropped to a low of 211 in 1932. Then, as lumber demand rose in the early 1940's, the number of operating sawmills jumped from 369 in 1940, to 1,381 in 1942, and finally reached a record high of 2,745 in 1947.

In the most recent two decades, while lumber production remained static, the number of sawmills decreased. In 1954, 96 sawmills—each producing more than a million board feet of lumber annually—accounted for slightly more than 25 percent of the production. The remaining 75 percent was produced by 2,283 small sawmills.

By 1969, 150 of the 684 operating sawmills in Pennsylvania were sawing more than a million board feet of lumber a year. This trend has been noted throughout the Northeastern States. As low-volume sawmills discontinue operations, the high-volume mills increase production.

Relatively few low-volume sawmills ceased operating in the less-forested Southeastern and Western Regions of Pennsylvania between 1964 and 1969 (table 6). In two heavily forested regions, the Northeastern and South-Central, the increase in the number of high-volume sawmills was accompanied by a higher-than-average decrease in the number of low-volume sawmills. This may indicate a lower level of competition between low- and high-volume sawmills for raw materials in the less-forested regions. Or it may indicate that low-volume sawmills in these regions have captive local markets for their limited production. Overall, the number of sawmills decreased in each region of the State, the highest sawmill mortality taking place in the lowest production classes.

Sawlog Production and Receipts Increase

Sawlog production decreased less than 1 percent between 1964 and 1969, although production was up 11 percent from the approximately 491 million board feet reported in 1954. While production decreased 9 percent in both the Western and North-Central Regions, it increased from 5 to 27 percent in the other regions during the 5-year period (table 7).

Sawlog receipts between 1964 and 1969 were up 4 percent for the State and increased 20 percent and 37 percent in the Southwestern and South-Central Regions respectively.

Pennsylvania's South-Central Region has made outstanding progress in building a stronger sawmill industry in the last 5 years. Sawlog production there increased 27 percent and sawlog receipts increased 37 percent because 13 sawmills were added to the 1-million-and-over production class. Nearly 90 percent of the sawlogs cut in the Region were sawed by mills located within the region. No sawlogs were shipped outside the State from the South-Central Region.

Detailed breakdowns of sawlog production and receipts by regions, species groups, and species for 1969 are contained in tables 8 to 21. These tables show that:

- Softwood sawlogs.—Eighty-nine percent of the volume cut was retained within the same region for manufacture, while another 10 percent was transported to other regions within Pennsylvania for manufacture. The remaining 1 percent—approximately 700 thousand board feet — was shipped from the region where it was cut to neighboring states for manufacture.

- Hardwood sawlogs. — Eighty-eight percent of the volume cut was retained within the same region for manufacture, while another 9 percent of the cut was transported to other regions within the State for manufacture. The remaining 3 percent was shipped to other states for manufacture.

- The Southwestern, Northeastern, and South-Central Regions were net importers of sawlogs in 1969. The Southwestern Region shipped 1.5 million board feet of sawlogs to other regions, while it received 17.3 million board feet from other regions. The other three regions shipped out a greater volume of sawlogs than they received.
- Red oak was the major hardwood sawlog species cut during 1969, accounting for 29 percent of the hardwood cut. Other important hardwood species that were cut included hard and soft maples, black cherry, and white oak. Each accounted for an additional 9 percent of the hardwood sawlog harvest. Fifty-five percent of the softwood sawtimber harvest was hemlock, 35 percent was white pine.

Sawlogs from Pennsylvania forests were shipped for manufacture to sawmills in four neighboring states during 1969 (table 22). New York was the recipient of the largest volume. Smaller volumes were shipped to Maryland, Ohio, and West Virginia. Pennsylvania sawmills reported receiving sawlogs from Delaware, Maryland, New York, Ohio, and West Virginia (table 23). West Virginia and New York accounted for 87 percent of the log receipts from other states. Red oak, black cherry, and soft and hard maples were major exports, while red and white oaks, soft and hard maples, and yellow-poplar were major imports.

PULPWOOD

Pennsylvania — the Philadelphia area in particular — has been important in the development of the pulp and paper industry in the United States. Several important dates in Pennsylvania's papermaking history *(Kellogg 1923)* include:

- 1690—The first paper mill in the United States was started in the outskirts of Philadelphia (Roxborough). The mill used linen rags as raw material.
- 1854—Soda pulp was first made commercially in the United States near Philadelphia, using the Burgess patent. Broadleaved species (hardwoods) were used as a raw material.
- 1866-67—A process of making pulp by boiling wood in a sulphur dioxide solution (sulphite process) was developed by a man named Tilghman in Philadelphia shortly after the Civil War and was patented by him. He used spruce, hemlock, poplar, and willow in his process.

Pulpwood Production Increases as Product Requirement Shifts

Pulpwood production has grown 50 percent in the past 7 years, rising from 534 thousand cords in 1963 to 806 thousand cords in 1969 (table 24). During this period a pronounced shift away from softwood has occurred. While softwood production dropped 43 percent, hardwood production rose 77 percent.

Pulpwood consumption at Pennsylvania mills has also grown. In 1969, 946 thousand cords were consumed. Of this, 727 thousand cords were cut within the State. The remaining 219 thousand cords were shipped in from other states and Canada.

Between 1899 and 1927 the State ranked among the first five states in pulpwood consumption and woodpulp production. In 1904 the 243 thousand cords of pulpwood consumed by Pennsylvania mills represented 8 percent of the United States total. Sixteen years later the consumption of 490 thousand cords again represented 8 percent of the United States total. During this period, the State was maintaining its dominance by importing large quantities of wood from the South and from Canada. Then, as pulp industries developed in the South and West, Pennsylvania's percentage of the Nation's woodpulp production dropped. The State's share of the national production dropped from 6.3 percent in 1923 to only 1.8 percent in 1952.

Pulping Capacity Continues to Grow through Internal Expansion

The Pennsylvania woodpulp industry has continued to grow over the years, mainly by adding production capacity to existing mills.

The installed daily pulping capacity of Pennsylvania pulpmills has risen from 1,163 tons in 1955 to 2,102 tons in 1968. This represents a 6 percent average annual increase, while the number of operating mills has dropped from 15 to 11.

Central Counties Are Important Pulpwood Producers

Nearly 3 million cords of pulpwood were harvested from Pennsylvania timberlands during the past 5 years (table 25). Most of it came from the State's heartland where the North-Central, South-Central, and Southwestern Regions meet. During 4 of the 5 years between 1965 and 1969, both Huntingdon and Clearfield Counties produced more than 50 thousand cords annually. Other high-producing counties were Centre and Bedford, both of which produced more than 50 thousand cords during at least one calendar year.

The most important hardwood producing region in the State—the North-Central Region—provided 48 percent of the pulpwood cut between 1965 and 1969. The South-Central Region produced 44 percent of the total pulpwood cut from softwoods. During the same period the pulpwood cut from the hardwood stands of the Northeastern Region increased substantially.

Manufacturing-plant residues have become an increasingly important source of pulpwood in Pennsylvania. Seventeen percent of the pulpwood used by Pennsylvania pulpmills in the last 5 years came from manufacturing residues. By recycling these residues, a waste-disposal problem is eliminated at the plant where the residues are generated, and wood fiber is provided that would otherwise have to be obtained by harvesting trees.

During 1969 nearly 50 thousand cords (8 percent) of the 622 thousand cords of pulpwood from roundwood cut were shipped to other states. Pennsylvania pulpmills in turn imported nearly 100 thousand cords of pulpwood from neighboring states and an additional 36 thousand cords from outside the Northeast to satisfy their wood requirements. Most of these imports of pulpwood were pine, spruce, and fir.

OTHER FOREST PRODUCTS

Most Veneer Logs Are Exported

Limited quantities of veneer have been manufactured in Pennsylvania for many years, but traditionally greater volumes of veneer logs have been shipped to other states for manufacture. A tabulation of veneer-log production and receipts for selected years, in millions of board feet, International ¼-inch rule, illustrates this:

Year	*Production*	*Receipts*
1954	4.6	0.5
1963	12.2	1.7
1968	16.5	4.8
1969	15.1	7.6

Three veneer plants were operating in the State in 1954; two were producing commercial veneer, and the third was producing basket veneer.

During our 1969 survey, no attempt was made to trace wood not channeled through primary manufacturers. Therefore the volume statistics presented for some species—such as black cherry—are no doubt low. They do not include veneer-log purchases by brokers for export overseas.

Yellow-poplar was the major species cut for veneer logs in 1954. By 1963 the demand for cherry furniture veneer caused black cherry to become the volume leader. During that year 5.3 million board feet of black cherry and 4.5 million board feet of yellow-poplar were harvested.

In 1969 another shift in consumer preferences in furniture was responsible for making red oak the veneer-log volume leader in Pennsylvania. The 7.3 million board-foot harvest of red oak represented 48 percent of the total harvest (table 26). Black cherry and yellow-poplar also continued to be important species cut for veneer logs.

Nearly two-thirds of the 1969 veneer-log harvest was shipped to other states for manufacture. Major recipients were New Jersey, West Virginia, and Virginia. Pennsylvania veneer plants, in addition to using local veneer logs, received logs from six other states in 1969 (table 27). Most of the imported logs were red oak. Nearly 91 percent of the log

volume handled by Pennsylvania veneer mills was red oak.

Wood Use in Underground Coal Mines Decreased

Over the years, Pennsylvania's coal mines have depended upon local forests as a source of mine props and shoring material. About 5.8 million cubic feet of local wood was used as round and split mine timbers in underground coal mines in 1969. This represents a 6-percent decrease from the 6.2 million cubic feet used in 1964, when more coal was being produced from underground mines.

Cooperage Log Production Up

The volume of cooperage logs cut in recent years in Pennsylvania has been increasing. Six cooperage plants processed more than 2 million board feet of white oak in 1954. Ten years later, production had climbed to over 5 million board feet, and by 1969 cooperage log production hit 9.7 million board feet. Local plant receipts included logs from four neighboring states in 1969, while only a small volume of the State's production was shipped to one neighboring state.

Bat and Handle Industry Remains Stable

Although white ash is a minor species in Pennsylvania's most important forest regions, it is the mainstay of one of the State's most stable wood-using industries—bat and handle manufacturing. These industries are located close to the ash stands upon which they depend. Twelve plants were operating in 1964, and 12.8 million board feet of ash was harvested that year from timberland within the State. By 1969 fifteen plants were operating and approximately 13.7 million board feet of ash was being cut. Another 4 million board feet of ash was being shipped in from other states for processing.

MANUFACTURING PLANT RESIDUES

The plant residues generated in the manufacture of primary wood products are becoming more important each year, both as a waste-disposal problem and a cheap source of industrial wood. More than 38 million cubic feet of wood residues were generated by Pennsylvania primary wood manufacturers in 1969 (table 28). Sixty-three percent—21 million cubic feet of hardwood and 3 million cubic feet of softwoods—were coarse residues suitable for chipping.

Nearly 60 percent, or 23 million cubic feet, of all residues were used (table 29). The dominant use, accounting for nearly half of the volume, was coarse residues used for such fiber products as woodpulp, hardboard, and particle board. Second in importance was the use of nearly 6 million cubic feet of fine material (sawdust and shavings) for livestock bedding and chicken litter.

Sawmill Residues Key to Greater Utilization

Sawmills generated more than 92 percent of all residues in 1969. Therefore the availability of unused residues to a large extent depended upon the distribution of these sawmills. Seven million cubic feet of fine residues and over 8 million cubic feet of coarse residues were piled or destroyed by Pennsylvania sawmills in 1969 because these mills were so far from potential users. Large quantities of coarse hardwood residues were available in the North-Central and South-Central Regions. As more low-volume sawmills cease to operate, and their markets are served by high-volume sawmills, more coarse residues should become economically available for chipping.

Bark — An Untapped Raw Material

More than 3 million cubic feet of softwood bark and 29 million cubic feet of hardwood bark accumulated at primary wood-using plants in Pennsylvania in 1969. Only a third of this bark was used. A quantity of material such as this poses a tremendous disposal problem.

This bark is an untapped raw-material reservoir that will find many new uses in coming years both on its own merits and as a substitute for higher value materials. Presently some bark from Pennsylvania's wood-using plants is being used as chicken litter and horticultural mulch. Some bark is also being used by the charcoal and electro-metallurgical industries.

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29 Volume of byproducts from primary wood-processing plants, by industry source, type of use, and species group, Pennsylvania, 1969

30 Volume of unused sawmill residues by geographic region, species group, and type of residue, Pennsylvania, 1969

Table 1.—*Growing-stock inventory, average annual growth, cut, and change by geographic region and species group, Pennsylvania, 1965*

Geographic region and species group	Inventory volume[1]	Average annual net growth	Average annual cut	Average annual change	
	Million cubic feet				*Percent of inventory*
Softwoods:					
Western	163	5.7	4.7	+1.0	0.6
North-Central	619	16.0	5.4	+10.6	1.7
Southwestern	54	1.7	.1	+1.6	3.0
Northeastern	433	12.4	5.8	+6.6	1.5
Southeastern	48	1.1	—	+1.1	2.3
South-Central	160	4.9	5.0	−.1	.1
All softwoods	1,477	41.8	21.0	+20.8	1.4
Hardwoods:					
Western	1,976	65.5	23.0	+42.5	2.2
North-Central	7,309	264.7	70.4	+194.3	2.7
Southwestern	1,644	65.4	23.9	+41.5	2.5
Northeastern	2,381	69.6	26.4	+43.2	1.8
Southeastern	1,216	44.5	22.0	+22.5	1.9
South-Central	1,857	63.5	17.3	+46.2	2.5
All hardwoods	16,383	573.2	183.0	+390.2	2.4
All species	17,860	615.0	204.0	+411.0	2.3

[1]Includes growing-stock trees on commercial forest land only.

Table 2.—*Sawtimber inventory, average annual growth, cut, and change, by geographic region and species group, Pennsylvania, 1965*

Geographic region and species group	Inventory volume[1]	Average annual net growth	Average annual cut	Average annual change	
	Million board feet[2]				*Percent of inventory*
Softwoods:					
Western	195	7.8	19.8	−12.0	6.2
North-Central	1,445	42.2	17.0	+25.2	1.7
Southwestern	92	3.3	.1	+3.2	3.5
Northeastern	1,025	27.2	18.3	+8.9	.9
Southeastern	113	2.6	—	+2.6	2.3
South-Central	398	12.4	17.8	−5.4	1.4
All softwoods	3,268	95.5	73.0	+22.5	0.7
Hardwoods:					
Western	3,183	151.0	47.9	+103.1	3.2
North-Central	9,758	396.6	148.5	+248.1	2.5
Southwestern	2,535	107.1	42.1	+65.0	2.6
Northeastern	2,565	85.9	27.6	+58.3	2.3
Southeastern	2,013	68.7	65.0	+3.7	.2
South-Central	2,947	95.8	34.5	+61.3	2.1
All hardwoods	23,001	905.1	365.6	+539.5	2.3
All species	26,269	1,000.6	438.6	+562.0	2.1

[1]Includes growing-stock trees on commercial forest land only.
[2]International ¼-inch rule.

Table 3.—*Volume of industrial roundwood by products produced in Pennsylvania in 1969*

Product	Volume in standard units				Roundwood volume		
	Standard units	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
					Thousand cubic feet		
Sawlogs	M board feet[1]	543,370	52,038	491,332	87,511	8,581	78,930
Pulpwood	Standard cords	621,900	59,200	562,700	49,752	4,736	45,016
Veneer logs	M board feet[1]	15,118	—	15,118	2,126	—	2,126
Cooperage logs	M board feet[1]	9,717	—	9,717	1,237	—	1,237
Mine timbers	M cubic feet	5,802	220	5,582	5,802	220	5,582
Posts	M pieces	270	—	270	231	—	231
Misc. products[2]	M cubic feet	2,262	11	2,251	2,262	11	2,251
Total					148,921	13,548	135,373

[1]International ¼-inch rule.
[2]Includes bat and handle stock, and other miscellaneous dimension stock.

Table 4.—*Timber products output from roundwood by product, Pennsylvania, 1964 and 1969*

Product	All species			Softwoods			Hardwoods		
	1964	1969	Change	1964	1969	Change	1964	1969	Change
	Million cubic feet		*Percent*	*Million cubic feet*		*Percent*	*Million cubic feet*		*Percent*
Sawlogs	87.8	87.5	(1)	5.9	8.6	+45	81.9	78.9	−4
Pulpwood	46.0	49.7	+8	7.1	4.7	−34	38.9	45.0	+16
Veneer logs	2.9	2.1	−27	—	—	—	2.9	2.1	−27
Cooperage logs	.8	1.2	+52	—	—	—	.8	1.2	+52
Mine timbers[2]	6.2	5.8	−6	.2	.2	—	6.0	5.6	−7
Posts	.2	.3	+18	—	—	—	.2	.3	+18
Misc. products[3]	6.9	2.3	−67	—	(4)	—	6.9	2.3	−67
	150.8	148.9	−1	13.2	13.5	+2	137.6	135.4	−2

[1]Less than 0.5 percent.
[2]Original 1964 production figure revised.
[3]Includes handle and bat stock and miscellaneous dimension stock.
[4]Less than 50,000 cubic feet.

Table 5.—*Industrial roundwood harvest*[1] *in Pennsylvania by region, species group, and product, 1969*

[In thousands of cubic feet]

Region and species group	Product			All products
	Sawlogs	Pulpwood	Other products[2]	
Western:				
Softwoods	771	144	113	1,028
Hardwoods	13,046	1,040	5,319	19,405
Total	13,817	1,184	5,432	20,433
North-Central:				
Softwoods	3,160	1,336	9	4,505
Hardwoods	27,823	23,776	2,804	54,403
Total	30,983	25,112	2,813	58,908
Southwestern:				
Softwoods	1,035	816	34	1,885
Hardwoods	14,694	5,744	1,633	22,071
Total	15,729	6,560	1,667	23,956
Northeastern:				
Softwoods	1,965	104	11	2,080
Hardwoods	7,449	5,824	593	13,866
Total	9,414	5,928	604	15,946
Southeastern:				
Softwoods	330	336	—	666
Hardwoods	6,265	1,832	471	8,568
Total	6,595	2,168	471	9,234
South-Central:				
Softwoods	1,320	2,000	64	3,384
Hardwoods	9,653	6,800	607	17,060
Total	10,973	8,800	671	20,444
All regions:				
Softwoods	8,581	4,736	231	13,548
Hardwoods	78,930	45,016	11,427	135,373
Total	87,511	49,752	11,658	148,921

[1]Does not include fuelwood or removals that are not manufactured into an industrial product.

[2]Other products includes cooperage and veneer logs, mine timbers, posts, bat and handle stock, and miscellaneous dimension and specialty stock.

Table 6.—*Number of operating sawmills in Pennsylvania by region and annual production class, 1964 and 1969*[1]

Region	Under 100 M		100-499 M		500-999M		Over 1 MM		All classes	
	1964	1969	1964	1969	1964	1969	1964	1969	1964	1969
Western	41	27	45	29	27	19	26	19	139	94
North-Central	78	42	83	69	53	39	75	58	289	208
Southwestern	51	14	37	31	29	23	33	29	150	97
Northeastern	88	33	40	32	17	16	15	16	160	97
Southeastern	58	36	38	28	11	10	10	7	117	81
South-Central	60	25	48	36	28	25	8	21	144	107
All regions	376	177	291	225	165	132	167	150	999	684

[1]Based upon reported lumber production during calendar years 1964 and 1969.

Table 7.—*Sawlog production and receipt relationships in Pennsylvania by region, 1964 and 1969*

Region	Production			Receipts		
	1964	1969	Change	1964	1969	Change
	Million bd. ft.[1]	*Million bd. ft.*[1]	*Percent*	*Million bd. ft*[2]	*Million bd. ft.*[1]	*Percent*
Western	97.9	85.9	−9	83.1	81.9	−2
North-Central	211.0	192.4	−9	199.3	182.3	−9
Southwestern	93.4	97.7	+5	100.5	120.4	+20
Northeastern	52.1	58.3	+12	56.9	58.2	+2
Southeastern	37.7	41.0	+9	37.8	34.9	−8
South-Central	53.6	68.1	+27	51.2	70.0	+37
All regions	545.7	543.4	([3])	528.8	547.7	+4

[1]International ¼-inch rule.
[2]Lumber tally based on lumber production for 1964.
[3]Less than 0.5 percent.

Table 8.—*Sawlog production for Pennsylvania by geographic region, species group, and where received, 1969*

[Million board feet, International ¼-inch rule]

Geographic region and species group	Received			Total production
	In the region	Shipped to other regions	Shipped out of state	
Softwoods:				
Western	3.8	0.6	0.3	4.7
North-Central	16.7	2.2	.3	19.2
Southwestern	6.3	—	—	6.3
Northeastern	11.6	.2	.1	11.9
Southeastern	1.4	.6	—	2.0
South-Central	6.4	1.6	—	8.0
All softwoods	46.2	5.2	0.7	52.1
Hardwoods:				
Western	62.8	15.0	3.4	81.2
North-Central	155.7	15.2	2.3	173.2
Southwestern	88.9	1.5	1.0	91.4
Northeastern	40.4	1.2	4.8	46.4
Southeastern	31.4	7.6	—	39.0
South-Central	54.6	5.5	—	60.1
All hardwoods	433.8	46.0	11.5	491.3
All species	480.0	51.2	12.2	543.4

Table 9.—*Sawlog receipts for Pennsylvania by geographic region, species group, and where produced, 1969*

[Million board feet, International ¼-inch rule]

Geographic region and species group	Produced			Total receipts
	In the region	In other regions	In other states	
Softwoods:				
Western	3.8	1.0	0.2	5.0
North-Central	16.7	.4	.1	17.2
Southwestern	6.3	2.3	—	8.6
Northeastern	11.6	.6	.5	12.7
Southeastern	1.4	.4	(1)	1.8
South-Central	6.4	.5	—	6.9
All softwoods	46.2	5.2	0.8	52.2
Hardwoods:				
Western	62.8	11.8	2.3	76.9
North-Central	155.7	6.6	2.9	165.2
Southwestern	88.9	15.0	7.9	111.8
Northeastern	40.4	2.7	2.3	45.4
Southeastern	31.4	1.4	.3	33.1
South-Central	54.6	8.5	—	63.1
All hardwoods	433.8	46.0	15.7	495.5
All species	480.0	51.2	16.5	547.7

[1]Less than 50,000 board feet.

Table 10.—*Sawlog production in the WESTERN REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Received			Total production
	In the region	Shipped to other regions	Shipped out of state	
Hemlock	2,633	438	183	3,254
White pine	1,052	167	117	1,336
Yellow pines	—	—	—	—
Other softwoods	84	—	—	84
Total softwoods	3,769	605	300	4,674
Ash	4,644	309	13	4,966
Aspen	381	56	—	437
Basswood	1,818	340	327	2,485
Beech	3,622	595	133	4,350
Yellow birch	226	17	—	243
Black birch	51	97	—	148
Butternut	31	7	—	38
Cherry	5,008	1,273	200	6,481
Elm	2,449	342	27	2,818
Hickory	1,649	138	43	1,830
Hard maple	6,833	1,714	380	8,927
Soft maple	7,145	1,553	60	8,758
White oaks	4,955	963	207	6,125
Chestnut oak	1,454	567	133	2,154
Red oaks	15,018	4,481	974	20,473
Black oak	2,237	247	67	2,551
Other oaks	1,110	177	—	1,287
Yellow-poplar	3,790	2,034	733	6,557
Walnut	51	35	160	246
Other hardwoods	322	14	—	336
Total hardwoods	62,794	14,959	3,457	81,210
All species	66,563	15,564	3,757	85,884

Table 11.—*Sawlog receipts in the WESTERN REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Produced			Total receipts
	In the region	In other regions	In other states	
Hemlock	2,633	526	152	3,311
White pine	1,052	497	8	1,557
Yellow pines	—	—	—	—
Other softwoods	84	—	—	84
Total softwoods	3,769	1,023	160	4,952
Ash	4,644	286	115	5,045
Aspen	381	9	—	390
Basswood	1,818	62	41	1,921
Beech	3,622	954	252	4,828
Yellow birch	226	66	7	299
Black birch	51	—	—	51
Butternut	31	—	—	31
Cherry	5,008	627	86	5,721
Elm	2,449	59	30	2,538
Hickory	1,649	86	74	1,809
Hard maple	6,833	1,030	375	8,238
Soft maple	7,145	1,151	126	8,422
White oaks	4,955	1,152	297	6,404
Chestnut oak	1,454	535	267	2,256
Red oaks	15,018	5,156	267	20,441
Black oak	2,237	76	200	2,513
Other oaks	1,110	—	—	1,110
Yellow-poplar	3,790	533	133	4,456
Walnut	51	—	—	51
Other hardwoods	322	95	—	417
Total hardwoods	62,794	11,877	2,270	76,941
All species	66,563	12,900	2,430	81,893

Table 12.—*Sawlog production in the NORTH-CENTRAL REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Received			Total production
	In the region	Shipped to other regions	Shipped out of state	
Hemlock	9,983	1,080	212	11,275
White pine	6,361	694	47	7,102
Yellow pines	234	150	—	384
Other softwoods	93	310	—	403
Total softwoods	16,671	2,234	259	19,164
Ash	3,319	385	178	3,882
Aspen	301	29	—	330
Basswood	2,665	158	82	2,905
Beech	12,240	1,453	152	13,845
Yellow birch	1,159	107	3	1,269
Black birch	597	8	5	610
Butternut	182	5	0	187
Cherry	20,876	1,320	430	22,626
Elm	773	70	—	843
Hickory	518	131	—	649
Hard maple	18,206	1,564	408	20,178
Soft maple	18,676	1,453	101	20,230
White oaks	13,177	1,213	198	14,588
Chestnut oak	5,073	305	100	5,478
Red oaks	49,167	5,888	540	55,595
Black oak	3,302	362	—	3,664
Other oaks	1,891	70	—	1,961
Yellow-poplar	2,711	644	74	3,429
Walnut	132	—	—	132
Other hardwoods	699	96	—	795
Total hardwoods	155,664	15,261	2,271	173,196
All species	172,335	17,495	2,530	192,360

Table 13.—*Sawlog receipts in the NORTH-CENTRAL REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Produced			Total receipts
	In the region	In other regions	In other states	
Hemlock	9,983	266	151	10,400
White pine	6,361	132	20	6,513
Yellow pines	234	—	—	234
Other softwoods	93	—	—	93
Total softwoods	16,671	398	171	17,240
Ash	3,319	295	6	3,620
Aspen	301	13	—	314
Basswood	2,665	96	86	2,847
Beech	12,240	547	75	12,862
Yellow birch	1,159	14	7	1,180
Black birch	597	12	—	609
Butternut	182	—	—	182
Cherry	20,876	522	432	21,830
Elm	773	74	—	847
Hickory	518	1	—	519
Hard maple	18,206	1,741	920	20,867
Soft maple	18,676	1,331	608	20,615
White oaks	13,177	228	67	13,472
Chestnut oak	5,073	53	—	5,126
Red oaks	49,167	1,271	659	51,097
Black oak	3,302	103	—	3,405
Other oaks	1,891	73	—	1,964
Yellow-poplar	2,711	99	—	2,810
Walnut	132	112	—	244
Other hardwoods	699	—	—	699
Total hardwoods	155,664	6,585	2,860	165,109
All species	172,335	6,983	3,031	182,349

Table 14.—*Sawlog production in the SOUTHWESTERN REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Received			Total production
	In the region	Shipped to other regions	Shipped out of state	
Hemlock	3,676	—	—	3,676
White pine	928	—	—	928
Yellow pines	218	—	—	218
Other softwoods	1,453	—	—	1,453
Total softwoods	6,275	—	—	6,275
Ash	1,788	67	—	1,855
Aspen	25	—	—	25
Basswood	1,789	—	50	1,839
Beech	2,784	—	—	2,784
Yellow birch	245	—	—	245
Black birch	300	—	—	300
Butternut	833	—	—	833
Cherry	8,711	56	100	8,867
Elm	537	—	—	537
Hickory	2,163	—	—	2,163
Hard maple	6,636	144	50	6,830
Soft maple	5,453	109	50	5,612
White oaks	8,971	309	150	9,430
Chestnut oak	9,226	215	50	9,491
Red oaks	27,134	528	200	27,862
Black oak	4,014	61	100	4,175
Other oaks	656	2	—	658
Yellow-poplar	7,122	11	100	7,233
Walnut	94	56	—	150
Other hardwoods	430	—	150	580
Total hardwoods	88,911	1,558	1,000	91,469
All species	95,186	1,558	1,000	97,744

Table 15.—*Sawlog receipts in the SOUTHWESTERN REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Produced			Total receipts
	In the region	In other regions	In other states	
Hemlock	3,676	465	—	4,141
White pine	928	299	—	1,227
Yellow pines	218	150	—	368
Other softwoods	1,453	1,350	—	2,803
Total softwoods	6,275	2,264	—	8,539
Ash	1,788	293	120	2,201
Aspen	25	59	—	84
Basswood	1,789	254	140	2,183
Beech	2,784	318	—	3,102
Yellow birch	245	19	—	264
Black birch	300	86	—	386
Butternut	833	7	—	840
Cherry	8,711	1,330	367	10,408
Elm	537	280	20	837
Hickory	2,163	250	87	2,500
Hard maple	6,636	655	350	7,641
Soft maple	5,453	709	670	6,832
White oaks	8,971	1,433	1,260	11,664
Chestnut oak	9,226	792	510	10,528
Red oaks	27,134	6,127	2,857	36,118
Black oak	4,014	182	260	4,456
Other oaks	656	133	—	789
Yellow-poplar	7,122	2,036	1,200	10,358
Walnut	94	35	60	189
Other hardwoods	430	14	—	444
Total hardwoods	88,911	15,012	7,901	111,824
All species	95,186	17,276	7,901	120,363

Table 16.—*Sawlog production in the NORTHEASTERN REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Received			Total production
	In the region	Shipped to other regions	Shipped out of state	
Hemlock	7,870	95	120	8,085
White pine	3,198	113	11	3,322
Yellow pines	96	5	—	101
Other softwoods	413	—	—	413
Total softwoods	11,577	213	131	11,921
Ash	1,075	126	46	1,247
Aspen	735	—	7	742
Basswood	2,943	9	264	3,216
Beech	4,247	242	371	4,860
Yellow birch	481	—	103	584
Black birch	182	5	32	219
Butternut	15	—	9	24
Cherry	3,137	171	719	4,027
Elm	307	—	9	316
Hickory	251	10	14	275
Hard maple	6,638	172	1,302	8,112
Soft maple	5,295	234	1,101	6,630
White oaks	2,387	17	47	2,451
Chestnut oak	2,214	51	5	2,270
Red oaks	8,678	45	452	9,175
Black oak	475	22	295	792
Other oaks	582	—	—	582
Yellow-poplar	576	33	14	623
Walnut	7	—	—	7
Other hardwoods	198	—	18	216
Total hardwoods	40,423	1,137	4,808	46,368
All species	52,000	1,350	4,939	58,289

Table 17.—*Sawlog receipts in the NORTHEASTERN REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Produced			Total receipts
	In the region	In other regions	In other states	
Hemlock	7,870	489	293	8,652
White pine	3,198	138	223	3,559
Yellow pines	96	17	—	113
Other softwoods	413	—	—	413
Total softwoods	11,577	644	516	12,737
Ash	1,075	77	60	1,212
Aspen	735	4	13	752
Basswood	2,943	60	103	3,106
Beech	4,247	471	160	4,878
Yellow birch	481	25	7	513
Black birch	182	7	—	189
Butternut	15	5	—	20
Cherry	3,137	382	106	3,625
Elm	307	—	—	307
Hickory	251	8	—	259
Hard maple	6,638	348	543	7,529
Soft maple	5,295	244	387	5,926
White oaks	2,387	181	181	2,749
Chestnut oak	2,214	145	48	2,407
Red oaks	8,678	397	740	9,815
Black oak	475	20	—	495
Other oaks	582	229	—	811
Yellow-poplar	576	66	—	642
Walnut	7	—	—	7
Other hardwoods	198	1	—	199
Total hardwoods	40,423	2,670	2,348	45,441
All species	52,000	3,314	2,864	58,178

Table 18.—*Sawlog production in the SOUTHEASTERN REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Received			Total production
	In the region	Shipped to other regions	Shipped out of state	
Hemlock	283	231	—	514
White pine	759	321	—	1,080
Yellow pines	36	61	—	97
Other softwoods	310	—	—	310
Total softwoods	1,388	613	—	2,001
Ash	594	267	—	861
Aspen	20	—	—	20
Basswood	30	15	—	45
Beech	419	20	—	439
Yellow birch	202	—	—	202
Black birch	126	5	—	131
Butternut	—	2	—	2
Cherry	65	2	—	67
Elm	244	26	—	270
Hickory	987	230	—	1,217
Hard maple	206	78	—	284
Soft maple	459	176	—	635
White oaks	3,529	724	—	4,253
Chestnut oak	2,654	941	—	3,595
Red oaks	10,357	2,015	—	12,372
Black oak	2,031	1,173	—	3,204
Other oaks	618	550	—	1,168
Yellow-poplar	8,271	1,374	—	9,645
Walnut	307	8	—	315
Other hardwoods	290	20	—	310
Total hardwoods	31,409	7,626	—	39,035
All species	32,797	8,239	—	41,036

Table 19.—*Sawlog receipts in the SOUTHEASTERN REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Produced			Total receipts
	In the region	In other regions	In other states	
Hemlock	283	32	2	317
White pine	759	395	10	1,164
Yellow pines	36	—	—	36
Other softwoods	310	—	—	310
Total softwoods	1,388	427	12	1,827
Ash	594	—	—	594
Aspen	20	—	—	20
Basswood	30	—	—	30
Beech	419	—	—	419
Yellow birch	202	—	—	202
Black birch	126	—	—	126
Butternut	—	5	—	5
Cherry	65	—	—	65
Elm	244	5	7	256
Hickory	987	30	28	1,045
Hard maple	206	—	1	207
Soft maple	459	8	7	474
White oaks	3,529	217	20	3,766
Chestnut oak	2,654	253	33	2,940
Red oaks	10,357	580	33	10,970
Black oak	2,031	23	100	2,154
Other oaks	618	5	3	626
Yellow-poplar	8,271	223	47	8,541
Walnut	307	5	1	313
Other hardwoods	290	20	—	310
Total hardwoods	31,409	1,374	280	33,063
All species	32,797	1,801	292	34,890

Table 20.—*Sawlog production in the SOUTH-CENTRAL REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Received			Total production
	In the region	Shipped to other regions	Shipped out of state	
Hemlock	1,607	25	—	1,632
White pine	4,051	542	—	4,593
Yellow pines	676	—	—	676
Other softwoods	52	1,050	—	1,102
Total softwoods	6,386	1,617	—	8,003
Ash	944	79	—	1,023
Aspen	1	—	—	1
Basswood	639	—	—	639
Beech	106	—	—	106
Yellow birch	322	—	—	322
Black birch	338	—	—	338
Butternut	16	5	—	21
Cherry	82	56	—	138
Elm	147	6	—	153
Hickory	2,003	136	—	2,139
Hard maple	677	180	—	857
Soft maple	1,465	113	—	1,578
White oaks	6,762	842	—	7,604
Chestnut oak	13,438	650	—	14,088
Red oaks	15,775	3,047	—	18,822
Black oak	6,406	9	—	6,415
Other oaks	960	16	—	976
Yellow-poplar	4,313	232	—	4,545
Walnut	80	61	—	141
Other hardwoods	161	20	—	181
Total hardwoods	54,635	5,452	—	60,087
All species	61,021	7,069	—	68,090

Table 21.—*Sawlog receipts in the SOUTH-CENTRAL REGION of Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Produced			Total receipts
	In the region	In other regions	In other states	
Hemlock	1,607	91	—	1,698
White pine	4,051	376	—	4,427
Yellow pines	676	49	—	725
Other softwoods	52	10	—	62
Total softwoods	6,386	526	—	6,912
Ash	944	282	—	1,226
Aspen	1	—	—	1
Basswood	639	50	—	689
Beech	106	20	—	126
Yellow birch	322	—	—	322
Black birch	338	10	—	348
Butternut	16	2	—	18
Cherry	82	17	—	99
Elm	147	26	—	173
Hickory	2,003	270	—	2,273
Hard maple	677	78	—	755
Soft maple	1,465	195	—	1,660
White oaks	6,762	857	—	7,619
Chestnut oak	13,438	951	—	14,389
Red oaks	15,775	2,473	—	18,248
Black oak	6,406	1,470	—	7,876
Other oaks	960	375	—	1,335
Yellow-poplar	4,313	1,371	—	5,684
Walnut	80	8	—	88
Other hardwoods	161	20	—	181
Total hardwoods	54,635	8,475	—	63,110
All species	61,021	9,001	—	70,022

Table 22.—*Sawlog production by species and state where received, Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Received in—							All production
	Pa.	Del.	Md.	N. J.	N. Y.	Ohio	W. Va.	
Hemlock	27,921	0	0	0	332	0	183	28,436
White pine	18,186	0	0	0	58	0	117	18,361
Yellow pines	1,476	0	0	0	0	0	0	1,476
Other softwoods	3,765	0	0	0	0	0	0	3,765
Total softwoods	51,348	0	0	0	390	0	300	52,038
Ash	13,597	0	0	0	224	13	0	13,834
Aspen	1,548	0	0	0	7	0	0	1,555
Basswood	10,406	0	50	0	433	0	240	11,129
Beech	25,728	0	0	0	603	53	0	26,384
Yellow birch	2,759	0	0	0	106	0	0	2,865
Black birch	1,709	0	0	0	37	0	0	1,746
Butternut	1,096	0	0	0	9	0	0	1,105
Cherry	40,757	0	100	0	1,249	13	87	42,206
Elm	4,901	0	0	0	9	27	0	4,937
Hickory	8,216	0	0	0	14	27	16	8,273
Hard maple	43,048	0	50	0	1,876	27	187	45,188
Soft maple	42,131	0	50	0	1,202	40	20	43,443
White oaks	43,849	0	150	0	245	20	187	44,451
Chestnut oak	36,788	0	50	0	105	0	133	37,076
Red oaks	142,133	0	200	0	1,326	107	533	144,299
Black oak	20,339	0	100	0	295	67	0	20,801
Other oaks	6,632	0	0	0	0	0	0	6,632
Yellow-poplar	31,111	0	100	0	88	133	600	32,032
Walnut	831	0	0	0	0	0	160	991
Other hardwoods	2,250	0	150	0	18	0	0	2,148
Total hardwoods	479,829	0	1,000	0	7,846	527	2,163	491,365
All species	531,177	0	1,000	0	8,236	527	2,463	543,403

Table 23.—*Sawlog receipts by species and state where produced, Pennsylvania, 1969*

[Thousand board feet, International ¼-inch rule]

Species	Received in—							Total receipts
	Pa.	Del.	Md.	N. J.	N. Y.	Ohio	W. Va.	
Hemlock	27,921	2	0	0	596	0	0	28,519
White pine	18,186	2	8	0	251	0	0	18,447
Yellow pines	1,476	0	0	0	0	0	0	1,476
Other softwoods	3,765	0	0	0	0	0	0	3,765
Total softwoods	51,348	4	8	0	847	0	0	52,207
Ash	13,597	0	0	0	171	10	120	13,898
Aspen	1,548	0	0	0	13	0	0	1,561
Basswood	10,406	0	20	0	225	5	120	10,776
Beech	25,728	0	0	0	425	15	47	26,215
Yellow birch	2,759	0	0	0	21	0	0	2,780
Black birch	1,709	0	0	0	0	0	0	1,709
Butternut	1,096	0	0	0	0	0	0	1,096
Cherry	40,757	0	67	0	614	10	300	41,748
Elm	4,901	0	27	0	20	10	0	4,958
Hickory	8,216	1	114	0	7	0	67	8,405
Hard maple	43,048	1	50	0	1,818	20	300	45,237
Soft maple	42,131	0	27	0	1,121	0	650	43,929
White oaks	43,849	0	40	0	248	30	1,507	45,674
Chestnut oak	36,788	0	233	0	48	0	577	37,646
Red oaks	142,133	0	1,000	0	1,399	0	2,157	146,689
Black oak	20,339	0	350	0	0	0	210	20,899
Other oaks	6,632	3	0	0	0	0	0	6,635
Yellow-poplar	31,111	7	40	0	0	0	1,333	32,491
Walnut	831	1	0	0	0	0	60	892
Other hardwoods	2,250	0	0	0	0	0	0	2,250
Total hardwoods	479,829	13	1,968	0	6,130	100	7,448	495,488
All species	531,177	17	1,976	0	6,977	100	7,448	547,695

Table 24.—*Pulpwood production in Pennsylvania by species group, 1963-69*[1]

[In thousands of rough cords]

Year	All species	Softwood	Hardwood
1963	534.4	117.2	417.2
1964	606.5	90.6	515.9
1965	592.5	79.5	513.0
1966	711.4	77.0	634.4
1967	754.8	87.4	667.4
1968	685.8	69.8	616.0
1969	958.3	66.7	891.6

[1]Includes production from both roundwood and manufacturing plant residues.

Table 25.—*Output of pulpwood from roundwood in Pennsylvania by region and species group, 1965-1969*

[In thousands of rough cords]

Region and species group	Roundwood pulpwood output year					All years
	1965	1966	1967	1968	1969	
Softwoods:						
Western	4.1	2.2	0.9	0.4	1.8	9.4
Southwestern	18.2	13.7	13.7	11.7	10.2	67.5
North-Central	10.6	13.1	26.5	25.0	16.7	91.9
South-Central	39.4	35.2	35.2	22.1	25.0	156.9
Northeastern	2.2	7.6	6.6	2.6	1.3	20.3
Southeastern	2.7	2.0	1.6	2.6	4.2	13.0
All softwoods	77.2	73.8	84.5	64.3	59.2	359.0
Hardwoods:						
Western	17.8	18.6	12.2	12.6	13.0	74.2
Southwestern	96.2	85.6	89.4	88.1	71.8	431.1
North-Central	219.3	252.7	249.5	219.7	297.2	1,238.4
South-Central	93.9	131.0	128.5	79.4	85.0	517.8
Northeastern	4.4	48.2	48.5	38.9	72.8	212.8
Southeastern	18.7	17.7	18.2	23.8	22.9	101.3
All hardwoods	450.3	553.8	546.3	462.5	562.7	2,575.6
All species	527.5	627.6	630.8	526.8	621.9	2,934.6

Table 26.—*Production of veneer logs and bolts in Pennsylvania, by species and state where used, 1969*[1]

[Thousand board feet, International ¼-inch rule]

Species	State where used										All states
	Pa.	N. Y.	N. J.	Md.	Ohio	W. Va.	Ind.	N. C.	Va.	Tenn.	
sh	—	—	—	—	1	63	—	—	6	—	70
asswood	—	79	—	—	3	—	—	—	—	—	82
eech	70	—	—	—	6	—	—	—	—	—	76
lack cherry	6	94	—	646	1	1,104	357	—	797	450	3,455
lm	62	—	—	—	—	—	—	—	—	—	62
ickory	63	—	—	56	15	125	—	14	17	—	290
ard maple	6	189	—	50	3	—	—	12	25	—	285
ed oak	5,059	101	—	285	5	1,644	—	—	197	—	7,291
hite oak	49	—	—	64	1	250	—	36	40	—	440
ack walnut	—	—	—	—	—	63	—	—	6	—	69
ellow-poplar	—	303	2,350	—	2	187	—	—	130	—	2,972
her hardwoods[2]	7	1	—	—	7	—	—	1	10	—	26
All species	5,322	767	2,350	1,101	44	3,436	357	63	1,228	450	15,118

[1]These statistics reflect veneer-log receipts at domestic veneer plants, and therefore do not include logs exported directly rough log brokers or concentrators.
[2]Includes aspen, yellow birch, butternut, and soft maple.

Table 27.—*Receipts of veneer logs and bolts in Pennsylvania, by species and state of origin, 1969*

[Thousand board feet, International ¼-inch log rule]

Species	State of origin							All states
	Pa.	Del.	N. J.	N. Y.	Ohio	W. Va.	Va.	
Beech	70	—	—	—	—	—	—	70
Black Cherry	6	—	—	—	—	—	—	6
Elm	62	—	—	—	—	—	—	62
Hickory	63	—	—	—	1	—	—	64
Hard maple	6	—	—	—	—	—	—	6
Red oak	5,059	207	206	368	204	615	276	6,935
White oak	49	—	—	—	—	—	23	72
Black oak	—	—	—	137	—	137	136	410
Other hardwoods	7	—	—	—	—	—	—	7
All species	5,322	207	206	505	205	752	435	7,632

Table 28.—*Total residues from primary wood-processing plants by industrial source, types of residue, and species group, Pennsylvania, 1969*

[In thousands of cubic feet]

Industrial source[1] and type of residue	All species	Softwood	Hardwood
Lumber industry:			
Coarse[2]	22,457	1,821	20,636
Fine[3]	12,810	1,509	11,301
Total	35,267	3,330	31,937
Veneer industry:			
Coarse	620	—	620
Fine	469	—	469
Total	1,089	—	1,089
Cooperage industry:			
Coarse	486	—	486
Fine	340	—	340
Total	826	—	826
Other primary industries:			
Coarse	654	2	652
Fine	359	2	357
Total	1,013	4	1,009
All industries:			
Coarse	24,217	1,823	22,394
Fine	13,978	1,511	12,467
Total	38,195	3,334	34,861

[1]Excludes woodpulp industry.
[2]Coarse residues include slabs, edgings, trimmings, and other material considered suitable for chipping.
[3]Fine residues include material such as sawdust and shavings.

Table 29.—*Volume of byproducts from primary wood-processing plants, by industry source, type of use, and species group, Pennsylvania, 1969*

[In thousands of cubic feet]

Source industry[1]	Type of use	All species	Softwood	Hardwood
Lumber	Fiber	10,500	584	9,916
	Fuel[2]	3,357	317	3,040
	Agricultural[3]	5,402	663	4,739
	Other[4]	1,007	70	937
	All uses	20,226	1,634	18,632
Veneer	Fuel	834	—	834
	Other	254	—	254
	All uses	1,088	—	1,088
Cooperage	Fiber	414	—	414
	Fuel	4	—	4
	Agricultural	281	—	281
	All uses	699	—	699
Other industries	Fiber	314	1	313
	Fuel	96	(5)	96
	Agricultural	151	1	150
	Other	30	(5)	30
	All uses	591	2	589
All industries	Fiber	11,228	585	10,643
	Fuel	4,291	317	3,974
	Agricultural	5,834	664	5,170
	Other	1,291	70	1,221
	Total	22,644	1,636	21,008

[1]Excludes woodpulp industry.
[2]Includes all residues used as domestic or industrial fuel whether sold or given away.
[3]Includes both livestock bedding and chicken litter.
[4]Includes residues used for charcoal, small dimension stock, and specialty items.
[5]Less than 500 cubic feet.

Table 30.—*Volume of unused sawmill residues by geographic region, species group, and type of residues, Pennsylvania, 1969*

[In thousands of cubic feet]

Geographic region	All species		Softwood		Hardwood	
	Fine	Coarse	Fine	Coarse	Fine	Coarse
Western	1,003	1,535	107	131	896	1,404
North-Central	2,198	2,106	222	258	1,976	1,848
Southwestern	1,420	1,142	105	48	1,315	1,094
Northeastern	558	1,132	132	279	426	853
Southeastern	265	623	15	36	250	587
South-Central	1,174	1,845	155	209	1,019	1,636
All regions	6,618	8,383	736	961	5,882	7,422

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